

IN THE CLAIMS:

1 1. (CURRENTLY AMENDED) A method for allowing a router to efficiently determine
2 a capability and time-to-live (TTL) configuration of a peer router in a computer network,
3 the method comprising the steps of:

4 automatically determining which capability TTL mode of operation the peer
5 router supports by sending an initial Border Gateway Protocol (BGP) message from the
6 router to the peer router, the initial BGP message including a first predetermined value of
7 the capability a TTL parameter;

8 if the router receives a positive acknowledgement of the initial BGP message
9 from the peer router, determining that the peer router supports exchanges of messages
10 using a new capability TTL mode of operation; and

11 if the router receives a negative acknowledgement of the initial BGP message
12 from the peer router, deciding that the peer router does not support the new capability
13 TTL mode of operation, and switching to an old capability TTL mode of operation by
14 resending the initial BGP message with a second predetermined value of the capability
15 TTL parameter.

1 2. (CURRENTLY AMENDED) The method of Claim 1 wherein the step of deciding
2 comprises the step of, if the router does not receive a response at all within a predeter-
3 mined time, deciding that the peer router does not support the new capability TTL mode
4 of operation.

1 3. (CANCELLED)

1 4. (CURRENTLY AMENDED) The method of Claim 31 wherein the new capability
2 TTL mode of operation is defined by BGP TTL Security Hack (BTSH).

1 5. (CURRENTLY AMENDED) The method of Claim 4 wherein the first predetermined
2 value of the TTL parameter eability-is 255.

1 6. (CURRENTLY AMENDED) The method of Claim 1-3-wherein the second prede-
2 termined value of the TTL parameter is 1.

1 7. (CURRENTLY AMENDED) The method of Claim 1 further comprising the steps of,
2 in response to the router receiving a negative acknowledgement of the initial BGP mes-
3 sage from the peer router:

4 upgrading the peer router to the new eability-TTL mode of operation;
5 rebooting the peer router, thereby destroying an existing session between the
6 routers;

7 establishing a new session by sending messages with the first predetermined value
8 of the eability-TTL parameter; and

9 communicating between the routers using messages with the first predetermined
10 value of the TTL parameter-eability.

1 8. (CURRENTLY AMENDED) A system adapted to allow a router to efficiently de-
2 termine a-eability-and-time-to-live (TTL) configuration of a peer router in a computer
3 network, the system comprising:

4 a routing protocol process executing in the peer router and adapted to receive an
5 initial routing protocol message sent by an initiating routing protocol process executing in
6 the router, the initial routing protocol message including a predetermined value of the-ea-
7 bility-a TTL pparameter, the routing protocol process returning one of (i) a positive ac-
8 knowledgegement of the initial routing protocol message to the router if the peer router
9 supports exchanges of messages using a new eability-TTL mode of operation and (ii) a

10 negative acknowledgement of the initial routing protocol message if the peer router does
11 not support the new capability-TTL mode of operation.

1 9. (CURRENTLY AMENDED) The system of Claim 8 wherein the routing protocol
2 process executing in the peer router is the implements Border Gateway Protocol version
3 4 (BGP) routing protocol and wherein the capability is a time-to-live (TTL) parameter.

1 10. (CURRENTLY AMENDED) The system of Claim 9 wherein the new capability
2 TTL mode of operation is defined by BGP TTL Security Hack (BTSH).

1 11. (CURRENTLY AMENDED) The system of Claim 10 wherein the predetermined
2 value of the TTL parameter capability is 255.

1 12. (CURRENTLY AMENDED) Apparatus adapted to allow a router to efficiently de-
2 termine a capability and time-to-live (TTL) configuration of a peer router in a computer
3 network, the apparatus comprising:

4 means for sending an initial Border Gateway Protocol (BGP) message from the
5 router to the peer router, the initial BGP message including a first predetermined value of
6 the capability a TTL parameter;

7 means for determining that the peer router supports exchanges of messages using
8 a new capability-TTL mode of operation, if the router receives a positive acknowledgement
9 of the initial BGP message from the peer router;;

10 means for deciding that the peer router does not support the new capability-TTL
11 mode of operation, if the router receives a negative acknowledgement of the initial BGP
12 message from the peer router, and for switching to an old capability-TTL mode of opera-
13 tion by resending the initial BGP message with a second predetermined value of the ea-
14 ability TTL parameter.

1 13. (CURRENTLY AMENDED) The apparatus of Claim 12 wherein the means for de-
2 ciding comprises:

3 if the router does not receive a response at all within a predetermined time, means
4 for deciding that the peer router does not support the new capability TTL mode of opera-
5 tion, if the router does not receive a response at all within a predetermined time.

1 14. (CURRENTLY AMENDED) The apparatus of Claim 12 wherein the initial message
2 is Border Gateway Protocol (BGP) routing protocol message, the capability is a time-to-
3 live (TTL) parameter and the new capability TTL mode of operation is defined by BGP
4 TTL Security Hack (BTSH).

1 15. (CURRENTLY AMENDED) The apparatus of Claim 12 further comprising, in re-
2 sponse to the router receiving a negative acknowledgement of the initial message from
3 the peer router:

4 means for upgrading the peer router to the new capability TTL mode of operation;

5 means for destroying an existing session between the routers;

6 means for sending messages with the first predetermined value of the capability
7 TTL parameter; and

8 means for communicating between the routers using messages with the first pre-
9 determined value of the capability TTL parameter.

1 16. (CURRENTLY AMENDED) A computer readable medium containing executable
2 program instructions for allowing a router to efficiently determine a time-to-live (TTL)
3 capability and configuration of a peer router in a computer network, the executable pro-
4 gram instructions comprising program instructions for:

5 automatically determining which capability TTL mode of operation the peer
6 router supports by sending an initial Border Gateway Protocol (BGP) message from the

7 router to the peer router, the initial BGP message including a first predetermined value of
8 the-capability a TTL parameter;

9 if the router receives a positive acknowledgement of the initial BGP message
10 from the peer router, determining that the peer router supports exchanges of messages
11 using a new capability-TTL mode of operation;

12 if the router receives a negative acknowledgement of the initial BGP message
13 from the peer router, deciding that the peer router does not support the new capability
14 TTL mode of operation, and switching to an old capability-TTL mode of operation by
15 resending the initial BGP message with a second predetermined value of the capability
16 TTL parameter.

1 17. (CURRENTLY AMENDED) The computer readable medium of Claim 16 wherein
2 the program instruction for deciding comprises one or more program instructions for, if
3 the router does not receive a response at all within a predetermined time, deciding that the
4 peer router does not support the new capability-TTL mode of operation.

1 18. (CANCELLED)

1 19. (CURRENTLY AMENDED) The computer readable medium of Claim-~~18~~¹⁶ wherein
2 the new capability-TTL mode of operation is defined by BGP TTL Security
3 Hack (BTHS).

1 20. (CURRENTLY AMENDED) The computer readable medium of Claim 16 further
2 comprising program instructions for, in response to the router receiving a negative ac-
3 knowledgement of the initial BGP message from the peer router:

4 upgrading the peer router to the new capability-TTL mode of operation;

5 destroying an existing session between the routers;

6 sending messages with the first predetermined value of the capability TTL parameter; and

8 communicating between the routers using messages with the first predetermined
9 value of the capability TTL parameter.

1 21. (CURRENTLY AMENDED) A system adapted to allow a router to efficiently de-
2 termine a capability and time-to-live (TTL) configuration of a peer router in a computer
3 network, the system comprising:

4 an initiating routing protocol process executing in the router and adapted to send
5 an initial routing protocol message to a routing protocol process executing in the peer
6 router, the initial routing protocol message including a predetermined value of the capability a TTL parameter, the initiating routing protocol process receiving one of (i) a positive
7 acknowledgement of the initial routing protocol message if the peer router supports
8 exchanges of messages using a new capability-TTL mode of operation and (ii) a negative
9 acknowledgement of the initial routing protocol message if the peer router does not sup-
10 port the new capability-TTL mode of operation.

1 22. (CURRENTLY AMENDED) The system of Claim 21 wherein the initiating routing
2 protocol process executing in the router is the-implements Border Gateway Protocol ver-
3 sion 4 (BGP) routing protocol and wherein the capability is a time-to-live (TTL) parame-
4 ter.

1 23. (CURRENTLY AMENDED) The system of Claim 22 or 21 wherein the new TTL capa-
2 bility-mode of operation is defined by BGP TTL Security Hack (BTSH).

1 24. (CURRENTLY AMENDED) The system of Claim 23 wherein the predetermined
2 value of the TTL parameter capability is 255.

1 25. (CURRENTLY AMENDED) A method comprising:

2 sending an initial message to a peer router before a session is established with the
3 peer router, the initial message including a first predetermined value of a ~~capability_time-~~
4 ~~to-live (TTL)~~ parameter in a field that is outside of a routing protocol that makes use of
5 ~~the-capability TTL parameter~~;

6 if a positive acknowledgement of the initial message is received from the peer
7 router, determining that the peer router supports exchanges of messages using a new ~~ea-~~
8 ~~ability-TTL~~ mode of operation;

9 if a negative acknowledgement of the initial message is received from the peer
10 router, deciding that the peer router does not support the new ~~capability-TTL~~ mode of op-
11 eration and switching to an old ~~capability-TTL~~ mode of operation by resending the initial
12 message with a second predetermined value of the ~~capability TTL parameter~~.

1 26. (CURRENTLY AMENDED) The method of Claim 25 wherein deciding further
2 comprises, if a response is not received within a predetermined time, deciding that the
3 peer router does not support the ~~new-capability-TTL~~ mode of operation.

1 27. (CURRENTLY AMENDED) The method of Claim 25 wherein the initial message is
2 a Border Gateway Protocol (BGP) routing protocol message and wherein the ~~capability~~ is
3 a ~~time-to-live (TTL) parameter~~.

1 28. (CURRENTLY AMENDED) The method of ~~Claim 27~~ 25 wherein the new ~~TTL~~
2 mode of operation is a BGP TTL Security Hack (BTSH).

1 29. (CURRENTLY AMENDED) The method of Claim 25 further comprising, in re-
2 sponse to receiving a negative acknowledgement of the initial message from the peer
3 router:

4 upgrading the peer router to the new ~~capability-TLL~~ mode of operation;

5 rebooting the peer router, thereby destroying an existing session between the
6 routers;
7 establishing a new session by sending messages with the first predetermined value
8 of the-eapability TTL parameter; and
9 communicating using messages with the first predetermined value of the-eapabil-
10 ity TTL parameter.

1 30. (CURRENTLY AMENDED) An apparatus comprising:

2 a processor configured to execute an initiating routing protocol process, the initi-
3 ating routing protocol process configured to send an initial routing protocol message to a
4 routing protocol process of a peer router before a session is established with the peer
5 router, the initial routing protocol message including a predetermined value of a time-to-
6 live (TTL) parameter eapability in a field that is outside of a routing protocol that makes
7 use of the TTL parametereapability, and wherein

8 the initiating routing protocol process is further configured to receive one of (i) a
9 positive acknowledgement of the initial routing protocol message if the peer router sup-
10 ports exchanges of messages using a new eapability-TTL mode of operation and (ii) a
11 negative acknowledgement of the initial routing protocol message if the peer router does
12 not support the new eapability-TTL mode of operation, and in response to a negative ac-
13 knowledgement of the initial routing protocol message, switch to an old eapability-TTL
14 mode of operation and resend the initial message with another predetermined value of the
15 eapability TTL parameter.

1 31. (CURRENTLY AMENDED) The apparatus of Claim 30 wherein the initiating rout-
2 ing protocol process is further configured to, if a response is not received within a prede-
3 termined time, decide that the peer router does not support the new eapability-TTL mode
4 of operation.

- 1 32. (CURRENTLY AMENDED) The apparatus of Claim 30 wherein the initiating rout-
- 2 ing protocol process is a Border Gateway Protocol version 4 (BGP) routing protocol
- 3 | process and wherein the capability is a time-to-live (TTL) parameter.

- 1 | 33. (CURRENTLY AMENDED) The apparatus of Claim 32 wherein the new capability
- 2 | TTL mode of operation is defined by BGP TTL Security Hack (BTSH).